

TRANSIT CONCRETE MIXER **DRUM WASHOUT SYSTEM**

Patent Application
of

Robert Gjestvang
2590 West 80th Avenue
Denver, Colorado 80221

Attorney

Emery L. Tracy
Reg. No. 34,081
P.O. Box 1518
Boulder, Colorado 80306-1518
Telephone: 303-443-1143
Facsimile: 303-443-1415

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TRANSIT CONCRETE MIXER DRUM WASHOUT SYSTEM

1 The present application is a continuation of pending provisional patent application
2 Serial No. 60/236,217, filed on September 28, 2000, entitled "Transit Concrete Mixer
3 Drum Washout System".
4

5 BACKGROUND OF THE INVENTION

6 1. Field of the Invention

7 This invention relates generally to a washout system for a transit concrete mixer
8 drum and, more particularly, it relates to a washout system for a transit concrete mixer
9 which is extendible into the mixer drum for delivering pressurized water into the interior
10 of the mixer drum.

11 12 2. Description of the Prior Art

13 Transit concrete mixer drums typically consist of a large mixer drum with internal
14 fins arranged in a corkscrew pattern. The mixer drum is mounted horizontally and rotated
15 about a center axis. As the mixer drum turns, the fins force the concrete into or out of the
16 drum depending on the direction of rotation.

17 Unfortunately, current concrete mixer drum design does not allow complete
18 removal of the concrete. In fact, when the mixer drum is loaded with fresh concrete and
19 then unloaded, a small amount of concrete remains inside the mixer drum adjacent the
20 fins. In an attempt to remove the remaining concrete, the concrete truck driver or
21 operator will then fill the mixer drum with water in an attempt to wash the remaining
22 concrete from the mixer drum. However, since concrete trucks only carry a maximum of
23 one hundred and twenty-five (125) gallons of water which must be used to water down
24 the load before concrete unloading, the remaining amount of water is not sufficient to
25 clean the mixer drum, especially on the side of the fins facing toward the front of the
26 concrete truck.

27 Another alternative to remove the concrete prior to hardening within the mixer
28 drum is to load a large amount of water into the mixer drum upon the concrete truck

1 returning to the operation site. Unfortunately, the water travels directly to the front of the
2 mixer drum and does not wash the back side of the fins. The operator typically can not
3 reach far enough into the mixer drum to reach the back side of the fins.

4 The concrete remaining in the mixer drum which is not washed out, the concrete
5 will harden inside the mixer drum. Over time, layers of concrete build up until large
6 amounts of dried, hardened concrete is present inside the mixer drum; reducing the mixer
7 drum volume and mixing with the fresh concrete. The hardened concrete must now be
8 removed by mechanical or chemical means. Neither of the mechanical means nor
9 chemical means are an attractive method for the concrete truck operator due to high costs
10 and environmental hazards. For instance, mechanical means typically requires a person
11 to physically enter the drum with a jackhammer to physically remove the hardened
12 concrete. Chemical means, on the other hand, typically requires dangerous chemical
13 which can contaminate the environment or require special handling and safety
14 procedures.

15 Accordingly, there exists a need for a transit concrete mixer drum washout system
16 which effectively removes concrete from the inside of a mixer drum prior to the concrete
17 hardening therein. Additionally, a need exists for a transit concrete mixer drum washout
18 system which does not require either expensive mechanical removal of hardened concrete
19 or dangerous chemicals harmful to the environment. Furthermore, there exists a need for
20 a transit concrete mixer drum washout system which is extendible into the mixer drum to
21 inject pressurized water to all areas thereby removing the concrete therein prior to
22 hardening.

23 24 SUMMARY

25 The present invention is a washout system for cleaning concrete and other
26 materials from the inside surface of a concrete mixer drum with a fluid. The concrete
27 mixer drum mounted to a concrete truck or the like with the fluid stored in a
28 predetermined fluid source with the fluid source activatable to release fluid. The washout
29 system comprises a telescoping pipe assembly extendible into the mixer drum with the

1 telescoping pipe assembly having a first end and a second end and the first end fluidly
2 connected to the fluid source. A spray bar is fluidly connected to the second end of the
3 telescoping pipe assembly and a plurality of nozzles positioned circumferentially about
4 and longitudinally along the spray bar wherein upon activation of the fluid source, thereby
5 introducing fluid into the telescoping pipe assembly, the second end of the telescoping
6 pipe assembly extends into the mixer drum.

7 The present invention additionally includes a method for cleaning concrete and
8 other materials from the inside surface of a concrete mixer drum with a fluid. The
9 method comprise providing a telescoping pipe assembly, providing a spray bar, forming a
10 plurality of nozzles along the spray bar, connecting the spray bar to the telescoping pipe
11 assembly, introducing fluid into the telescoping pipe assembly, and extending at least a
12 portion of the telescoping pipe assembly into the mixer drum.

13 The present invention further includes an assembly for cleaning concrete and
14 other materials from the inside surface of a concrete mixer drum with a fluid. The
15 assembly comprises telescoping means extendible into the mixer drum and spray means
16 connected to the telescoping means.

18 BRIEF DESCRIPTION OF THE DRAWINGS

19 FIG. 1 is a sectional side view illustrating a transit concrete mixer drum washout
20 system, constructed in accordance with the present invention, with the washout system
21 extended into the mixer drum;

22 FIG. 2 is an elevational side view illustrating the transit concrete mixer drum
23 washout system, constructed in accordance with the present invention, with the washout
24 system in the starting position; and

25 FIG. 3 is an elevation side view illustrating the transit concrete mixer drum
26 washout system, constructed in accordance with the present invention, with the washout
27 system in the activated position.

28 29 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

1 As illustrated in FIGS. 1 – 3, the present invention is a washout system, indicated
2 generally at 10, for washing concrete or the like from a transit concrete mixer drum 12 or
3 other type of vehicle with difficult accessibility. As discussed above, transit concrete
4 mixer drums 12 typically consist of a large mixer drum 12 with internal mixing fins 14
5 arranged in a substantial corkscrew pattern. The mixer drum 12 is typically mounted
6 substantially horizontally upon a concrete truck and rotated about a center axis.
7 Depending on the desired direction of rotation, as the mixer drum 12 rotates about the
8 center axis, the mixing fins 14 actually force the concrete deeper into the mixer drum 12
9 to insure complete mixing of the concrete or out of the mixer drum 12 for deposit of the
10 concrete in a desired location.

11 The washout system 10 of the present invention includes a telescoping pipe 16
12 having a plurality of pipe sections with each pipe section being receivable within the
13 adjacent pipe section such that in the starting position, the washout system 10 is
14 completely retracted. At the end of the telescoping pipe 16, a spray bar 18 is fluidly
15 connected thereto. The spray bar 18 preferably has a plurality of nozzles 20 positioned
16 circumferentially about and longitudinally along the spray bar 18 to direct water in all or
17 substantially all directions within the mixer drum 12, including to hard-to-reach areas
18 behind the mixing fins 14 where concrete tends to collect thereby insuring complete
19 washout of the mixer drum 12.

20 The telescoping pipe 16 is connected to a water supply 22 and is extendible
21 completely into the mixer drum 12 to reach the back side of all of the mixing fins 14.
22 When pressurized water is applied to the telescoping pipe 16, the washout system 10 of
23 the present invention is activated with the spray bar 18 automatically or manually
24 extending completely into the mixer drum 12. The nozzles 20 of the spray bar 18 direct
25 the pressurized water onto the inside surfaces of the mixer drum 12, including the back
26 side of the mixing fins 14, not normally reachable through any other conventional mixer
27 drum washing method.

28 The washout system 10 is connectable to a water supply 22, either from a
29 standpipe at the operation site or the water supply stored on the concrete truck, if any

1 remains after removal of the concrete at the desired location. Furthermore, non-toxic,
2 environmentally friendly cleaning agents can be used, although not necessarily required,
3 to assist in thoroughly cleaning the inside surfaces of the mixer drum 12, including the
4 mixing fins 14.

5 As described above, preferably, the length of the telescoping pipe 16 is sufficient
6 to reach the front of the farthest forward mixing fin 14 of the mixer drum 12 and wash the
7 back side of all of the mixing fins 14 to inhibit any concrete building up on the back side
8 of the fins 14 or elsewhere within the mixer drum 12. The nozzles 20 are preferably
9 recessed relative to the spray bar 18 to inhibit any potential problems associated with
10 retracting the spray bar 18 into the telescoping pipe 16 once the mixer drum 12 washout is
11 complete and deactivated. Furthermore, the angle of the telescoping pipe 16 relative to
12 the ground should be equivalent to the interior layout of the mixer drum 12 so that the
13 telescoping pipe 16 does not become caught or broken off inside the mixer drum 12.

14 The spray bar 18 of the washout system 10 of the present invention is preferably
15 includes an automatic return system 24 such as a weight and pulley or spring. The return
16 system 24 allows the spray bar 18 to automatically retract into the telescoping pipe 16
17 once the water pressure to the telescoping pipe 16 is turned off or otherwise disconnected.
18 The automatic return system 24 allows the spray bar 18 and the telescoping pipe 16 to
19 return to the starting, stored position and not remain inside the mixer drum 12 when the
20 concrete truck is in transit. It should be noted, however, that a manual return system 24 is
21 also within the scope of the present invention.

22 It should be noted that the washout system 10 can be connected directly to the
23 concrete truck or the standpipe. Therefore, the washout system 10 can be transported to a
24 job location for immediate clean out.

25 The foregoing exemplary descriptions and the illustrative preferred embodiments
26 of the present invention have been explained in the drawings and described in detail, with
27 varying modifications and alternative embodiments being taught. While the invention
28 has been so shown, described and illustrated, it should be understood by those skilled in
29 the art that equivalent changes in form and detail may be made therein without departing

1 from the true spirit and scope of the invention, and that the scope of the present invention
2 is to be limited only to the claims except as precluded by the prior art. Moreover, the
3 invention as disclosed herein, may be suitably practiced in the absence of the specific
4 elements which are disclosed herein.

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